



LOUISIANA CHEMICAL MANUFACTURER

LSU INDUSTRIAL TRAINING AND ASSESSMENT CENTER

CASE STUDY NO. 2

Audit Highlights

- The team's report identified five recommendations that estimated annual savings at \$108,233.
- The total implementation cost of projects is estimated at \$216,964 with an average payback period of 3.3 years.
- The recommended projects incorporate repurposing scrap plastics.

Facility Highlights

- The site is part of the LSU AgCenter's network of rural manufacturers.
- The facility shares space with agricultural fields and strives for relationships that could benefit both industries.
- Students were able to meet engineers who graduated from LSU at the site and shared experiences on the transition from academic to industry.

Summary

The LSU Industrial Training and Assessment Center (ITAC), hosted by the LSU College of Engineering, in partnership with the LSU AgCenter, worked with local chemical manufacturers to take the next step into a sustainable future. As part of the U.S. Department of Energy Office of Manufacturing and Energy Supply Chains (MESC) funding, the team of students and faculty provided no-cost sustainability assessments for the manufacturer. The team recommended projects including repurposing scrap plastics, utilizing higher efficiency lamps and employing adjustable drive or multiple speed motors on the current system. The assessment took place during the fall 2024 cycle and will hopefully lead to a future successful funding application from the manufacturer.



Water collection and cooling towers have opportunities for sustainability

Application Process

To take part in an assessment with the LSU team or for more information, visit the DOE-ITAC website or email M.P. Hayes at mhayes@agcenter.lsu.edu with questions. This program is designed for manufacturers with annual utility costs of \$100,000 to \$3,500,000 and annual revenue less than \$250 million. Other programs may be available for facilities that do not meet this requirement. In previous years, there have been funding opportunities associated with recommendations for implementations for eligible manufacturers through various federal agencies.



Utilize Higher Efficiency Lamps and/or Ballasts

The LSU team observed that the facility's lights were outdated during the assessment. During the walkthrough, it was noted that these traditional systems contribute significantly to the facility's electrical load while providing lower-quality illumination compared to modern standards. By transitioning to high-efficiency LEDs and/or ballasts, the facility can achieve better lumen output while saving 998,412 kWh per year. Furthermore, the shift to higher-efficiency lighting emits far less waste heat, reducing the cooling load on the facility's HVAC system. This recommendation can also be considered for rebates by utility providers through the Entergy Solutions program.

Energy Savings
998,412 kWh/year

Total Cost Savings
\$50,919/year

Implementation Cost
\$11,944

Payback Period
0.2 years

Repurposing Scrap Plastics

Energy Savings
None

Total Cost Savings
\$22,320/year

Implementation Cost
None

Payback Period
None

The team identified opportunities in improving management of scrap plastics by recycling or regrinding excess material for reuse in production, reducing the need for new raw plastics. Reuseable parts could be directed to secondary application, while unsalvageable plastics could be sold to external buyers. These measures would lower disposable costs, reduce material expenses and support the facility's sustainability goals through waste diversion and resource efficiency.

Use Adjustable Frequency Drive or Multiple Speed Motors on Existing System

During the team's visit, the students observed that several motor-driven systems currently operate at a constant, fixed speed. The team noticed that these systems were not as efficient as the variable frequency drives which allow for fluctuating speeds for the production processes. By installing adjustable frequency drives or multi-speed motors, the facility can adjust the motor's rotational speed to meet the processing requirements. This not only lowers electricity consumption but also extends equipment lifespan by reducing mechanical stress. Operators can also achieve more precise control over flow and pressure, leading to more consistent performance and reduced system noise.

Energy Savings
180,842 kWh/year

Total Cost Savings
\$9,223/year

Implementation Cost
\$5,320

Payback Period
0.57 years

Other Recommendations

The team had additional recommendations for upgrading to higher-efficiency equipment and renewable options. For the compressors, updating the controls saves \$2,963 per year with the integration of industrial internet of things (IIOT) at a \$12,500 implementation cost. By implementing solar heat to make electricity, it reduces electricity consumption

and saves \$22,808 per year with a \$187,200 implementation cost. The renewable recommendation can look for support from other federal agencies like the U.S. Department of Agriculture for rural energy funding. The outlined recommendations are a summary and not a comprehensive economic analysis of projects.

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